WHAT IS CLAIMED IS:

1. A method for determining a correction source in a space based augmentation system (SBAS) for use by a global positioning system (GPS) device, comprising:

receiving GPS data;

receiving an SBAS signal from a correction source, the SBAS signal containing a number of ionospheric mask messages;

analyzing the ionospheric mask messages; and

constructing an abbreviated bounding region around a group of similar type grid points.

2. The method of claim 1, wherein each ionospheric mask message includes a number of ionospheric mask bits with each bit representing a single grid point in a single ionospheric band.

3. The method of claim 1, wherein receiving GPS data includes receiving non-differentially corrected GPS data from a GPS satellite.

4. The method of claim 1, wherein the method further includes storing the ionospheric mask message data in a memory of the GPS device.

5. The method of claim 1, wherein analyzing the ionospheric mask messages includes analyzing ionospheric mask bits of each ionospheric mask message to determine whether each ionospheric mask bit is set to a 1 or a 0.

6. The method of claim 1, wherein constructing an abbreviated bounding region around a group of similar type grid points includes constructing an abbreviated

bounding region around a type of grid points having an ionospheric delay correction associated therewith.

7. The method of claim 6, wherein constructing an abbreviated bounding region around a group of similar type grid points includes using a southwest corner latitude and longitude containing a southernmost latitude and a westernmost longitude derived from the ionospheric mask messages and using a northeast corner latitude and longitude containing a northernmost latitude and an easternmost longitude derived from the ionospheric mask messages.

8. A method for determining a correction source in a space based augmentation system (SBAS), comprising:

receiving ionospheric mask messages from a first GEO satellite;

analyzing the ionospheric mask messages to determine a first abbreviated bounding region for a group of ionospheric grid points; and

determining a position of a GPS device relative to the first abbreviated bounding region.

9. The method of claim 8, wherein the method further includes:

determining whether the position of the GPS device is within the first abbreviated bounding region.

10. The method of claim 8, wherein the method further includes:

receiving ionospheric mask messages from a second GEO satellite;

analyzing the ionospheric mask messages to construct a second abbreviated bounding region for a group of ionospheric grid points; and

determining the position of the GPS device relative to the second abbreviated bounding region.

11. The method of claim 10, wherein the method further includes:

determining whether the position of the GPS device is within the second abbreviated bounding region.

12. The method of claim 10, wherein the method is performed in the order listed.

13. The method of claim 10, wherein the method further includes storing an identifier received from the first and the second GEOs.

14. The method of claim 8, wherein, when the GPS device is within only a single abbreviated bounding region constructed from two or more GEOs, processing SBAS correction messages received from the GEO satellite associated with the single abbreviated bounding region which encompasses the position of the GPS device.

15. The method of claim 10, wherein, when the GPS device is within one or more abbreviated bounding regions constructed from two or more GEOs, performing an analysis of which abbreviated bounding region more fully encompasses the position of the GPS device and processing SBAS correction messages received from the GEO satellite associated with that abbreviated bounding region which most fully encompasses the position of the GPS device.

16. The method of claim 10, wherein, when the GPS device is not within one or more abbreviated bounding regions constructed from two or more GEOs, computing a distance from the position of the GPS device to a center of all the abbreviated bounding regions and processing SBAS correction messages received from the GEO

satellite associated with an abbreviated bounding region whose center is a shortest distance from the position of the GPS device.

17. The method of claim 10, wherein analyzing the ionospheric mask messages to determine each abbreviated bounding region includes using a northeastern most grid point, and a southwestern most grid point, containing a group of ionospheric grid points having delay correction messages associated therewith, which may be located across one or more bands of ionospheric grid points.

18. A computer-readable medium having computer-executable instructions adapted to:

receive GPS data;

receive an SBAS signal from a correction source, the SBAS signal containing a number of ionospheric mask messages,

analyze the ionospheric mask messages; and

construct an abbreviated bounding region around a group of similar type ionospheric grid points.

19. The computer-readable medium of claim 18, wherein each ionospheric mask message includes a number of ionospheric mask bits with each bit representing a single ionospheric grid point in a single ionospheric band.

20. The computer-readable medium of claim 19, wherein the computer-executable instructions adapted to analyze ionospheric mask messages include computer-executable instructions adapted to analyze each ionospheric mask bit for a 1 or a 0 bit.

21. The computer-readable medium of claim 18, wherein the computer-executable instructions adapted to receive GPS data include computer-executable instructions adapted to receive non-differentially corrected GPS data from a GPS satellite.

22. The computer-readable medium of claim 18, wherein the computer-executable instructions adapted to receive an SBAS signal further include computer-executable instructions adapted to store the ionospheric mask messages in a memory of the GPS device.

23. The computer-readable medium of claim 18, wherein the computer-executable instructions adapted to construct an abbreviated bounding region around a group of similar type of ionospheric grid points include instructions adapted to construct an abbreviated bounding region around a type of ionospheric grid points having an SBAS correction message associated therewith.

24. The computer-readable medium of claim 18, wherein the computer-executable instructions adapted to construct an abbreviated bounding region around a group of similar type ionospheric grid points include instructions adapted to construct an abbreviated bounding region using a southwest corner latitude and longitude containing a southernmost latitude and a westernmost longitude derived from the ionospheric mask messages and using a northeast corner latitude and longitude containing a northernmost latitude and an easternmost longitude derived from the ionospheric mask messages.

25. The computer-readable medium of claim 18, wherein the computer-executable instructions further include instructions adapted to process SBAS

correction messages received from the first correction source when a position of a GPS device is within the abbreviated bounding region.

26. A data structure for use by a global positioning system (GPS) device in making space based augmentation system (SBAS) corrections, comprising:

a field representing an SBAS satellite identity;

a field containing a number of ionospheric mask messages, wherein each of the ionospheric mask messages includes a number of ionospheric grid points; and

a field representing an abbreviated bounding region around a group of similar type grid points in the field containing a number of ionospheric mask messages.

27. The data structure of claim 26, wherein each grid point is in a single ionospheric band, each grid point indicating whether SBAS correction data is being provided by the SBAS satellite identity for that grid point.

28. The data structure of claim 26, wherein the field representing an abbreviated bounding region includes a field for an abbreviated bounding region having at least two periphery coordinate data points around a group of grid points having SBAS correction messages associated therewith.

29. The data structure of claim 26, wherein the field representing the abbreviated bounding region is derived from a number of ionospheric mask messages, each ionospheric mask message having a data structure including:

a field representing an SBAS satellite identity;

a field representing an index of band;

a field representing an issue of data indicator; and

a field containing a number of ionospheric mask bits with each mask bit representing a single grid point in a single ionospheric band, and each mask bit indicating whether SBAS correction data is being provided by the SBAS satellite identity for that grid point.

30. A Global Positioning System (GPS) device, comprising:

a GPS receiver operable to receive GPS signals and Space Based Augmentation System (SBAS) signals including a number of ionospheric mask messages; and

wherein the device is operable to construct an abbreviated bounding region around a group of grid points contained in the number of ionospheric mask messages.

31. The device of claim 30, wherein the device is further operable to determine whether a location of the GPS device is within the abbreviated bounding region.

32. The device of claim 30, wherein the GPS device includes a portable GPS receiver device.

33. The device of claim 30, wherein the GPS device includes a personal digital assistant (PDA).

34. The device of claim 30, wherein the GPS device includes a wireless communication device.